

What is claimed is:

- 1 1. A heat sink for dissipating thermal energy from an electronic device, the  
2 heat sink comprising:
  - 3 a base adapted to be thermally coupled to the electronic device; and
  - 4 a fin thermally coupled to the base, the fin including a first portion made
  - 5 from a first material and a second portion made from a second material, wherein one
  - 6 edge of the first portion and an opposing edge of the second portion form at least
  - 7 one of a lap joint and a butt joint between the first portion and the second portion.
- 1 2. The heat sink of claim 1 wherein the first portion is coupled to the base and  
2 the second portion is coupled to the first portion.
- 1 3. The heat sink of claim 1 wherein the first portion is a sheet of the first  
2 material and the second portion is a sheet of the second material.
- 1 4. The heat sink of claim 3 wherein the sheet of the first material and the sheet  
2 of the second material are in substantially the same plane.
- 1 5. The heat sink of claim 1 wherein the one edge of the first portion and the  
2 opposing edge of the second portion form a butt joint between the first portion and  
3 the second portion.
- 1 6. The heat sink of claim 1 wherein the one edge of the first portion and the  
2 opposing edge of the second portion form a lap joint between the first portion and  
3 the second portion.
- 1 7. The heat sink of claim 1 wherein the first material has a higher thermal  
2 conductivity than the second material, and the second material has a lower density  
3 than the first material.

1    8.    The heat sink of claim 1 further comprising at least one additional fin  
2    extending from the base.

1    9.    The heat sink of claim 1 wherein the fin includes a reinforcing member that  
2    supports the at least one of a lap joint and a butt joint.

1    10.   The heat sink of claim 1 wherein the first portion and the second portion are  
2    coupled together by resistance spot welding to form at least one of a lap joint and a  
3    butt joint between the first portion and the second portion.

1    11.   A heat sink for dissipating thermal energy from an electronic device, the  
2    heat sink comprising:  
3        a copper base adapted to be thermally coupled to the electronic device; and  
4        a fin thermally coupled to the base, the fin comprising a copper portion and an  
5        aluminum portion such that the copper portion of the fin conducts thermal energy  
6        away from the copper base to the aluminum portion of the fin, wherein one edge of  
7        the copper portion and an opposing edge of the aluminum portion form at least one  
8        of a lap joint and a butt joint between the copper portion and the aluminum portion.

1    12.   The heat sink of claim 11 wherein the copper portion and the aluminum  
2    portion are coupled together by brazing.

1    13.   The heat sink of claim 12 wherein the one edge of the copper portion and the  
2    opposing edge of the aluminum portion are coupled together to form a lap joint  
3    between the copper portion and the aluminum portion.

1 14. A method comprising:  
2 constructing a fin by joining one edge of a first portion made from a first  
3 material to an opposing edge of a second portion made from a second material to  
4 form at least one of a butt joint and a lap joint between the first portion and the  
5 second portion;

6       thermally coupling the fin to a base to form a heat sink; and  
7 thermally coupling the heat sink to an integrated circuit such that the heat  
8 sink conducts thermal energy away from the integrated circuit during operation of  
9 the integrated circuit.

1 15. The method of claim 14 wherein thermally coupling the fin to the base to  
2 form the heat sink includes coupling the more thermally conductive of the first and  
3 second portions to the base.

1 16. The method of claim 14 wherein constructing a fin by joining a first portion  
2 to a second portion includes friction welding the first portion to the second portion.

1 17. The method of claim 14 wherein constructing a fin by joining one edge of a  
2 first portion made from a first material to an opposing edge of a second portion  
3 made from a second material includes orientating a sheet of the first material in  
4 substantially the same plane as another sheet of the second material.

1 18. The method of claim 14 wherein constructing a fin by joining one edge of a  
2 first portion made from a first material to an opposing edge of a second portion  
3 made from a second material includes joining a copper portion to an aluminum  
4 portion.

1 19. The method of claim 18 wherein thermally coupling the fin to the base to  
2 form the heat sink includes thermally coupling the copper portion of the fin to the  
3 base.

1 20. A computer system comprising:  
2 an integrated circuit board;  
3 a processor coupled to the integrated circuit board; and  
4 a heat sink thermally coupled to the processor, the heat sink comprising a  
5 base to transfer heat away from the processor, and a fin thermally coupled to the  
6 base, the fin including a first portion made from a first material and a second portion  
7 made from a second material, wherein one edge of the first portion and an opposing  
8 edge of the second portion form at least one of a lap joint and a butt joint between  
9 the first portion and the second portion.

1 21. The computer system of claim 20 wherein at least one of the first and second  
2 portions of the fin conducts thermal energy away from the base.

1 22. The computer system of claim 20 wherein the first material is copper, the  
2 second material is aluminum, and the base is copper.

1 23. The computer system of claim 20 wherein the one edge of the first portion  
2 and the opposing edge of the second portion form a lap joint between the first  
3 portion and the second portion.

1 24. The computer system of claim 20 wherein the first portion and the second  
2 portion of the fin are coupled together by friction stir welding to form at least one of  
3 a lap joint and a butt joint between the first portion and the second portion.

1 25. The computer system of claim 20 further comprising a chassis, the integrated  
2 circuit board being mounted in the chassis.

1 26. The computer system of claim 20 further comprising a memory coupled to  
2 the processor.